CLAIMS

1. A magnetoelectric transducer characterized in that the transducer comprises a magnetosensitive section and internal electrodes formed on an upper surface of insulating substrate having conductive layers formed on side surfaces thereof, that an insulating portion and each of said conductive layers are formed of a sintered compact, that the sintered compact of said conductive layer is mainly included of metal of a high melting point of 1,600°C or higher and ceramic powders, and that the sintered compact of said conductive layer contains 10% or more and 90% or less of the high-melting-point metal.

2. The magnetoelectric transducer according to Claim 1, characterized in that the high-melting-point metal is W, Mo, Ta, or a mixture thereof, and the sintered compact of the insulating layer is a substrate composed of alumina.

3. The magnetoelectric transducer according to Claim 1, characterized in that an adhesive resin layer or an inorganic layer is formed on a upper surface of said insulating substrate, and the magnetosensitive layer and each of the internal electrodes are formed thereon.

4. The magnetoelectric transducer according to Claim 3, characterized in that the sintered compact of said

conductive layer and each internal electrode, separated from each other at least via a step of said adhesive resin layer or said inorganic layer, are electrically connected together using a conductive resin or a metal material.

5. The magnetoelectric transducer according to Claim 1, characterized in that an inorganic layer is formed on the upper surface of said insulating substrate, and an InSb-based thin film having an electron mobility of 10,000cm^2/V/sec. or more is formed on the inorganic layer.

6. The magnetoelectric transducer according to Claim 1, characterized in that said inorganic layer is made of silica, alumina, or glass.

7. The magnetoelectric transducer according to Claim 1, characterized in that a resin layer is formed on the upper surface of said insulating substrate, and an InSb-based thin film having an electron mobility of 20,000cm^2/V/sec. or more is formed on the resin layer.

8. The magnetoelectric transducer according to Claim 1, characterized in that a metal coat is formed at least on a surface of the sintered compact of said conductive layer.

9. The magnetoelectric transducer according to Claim 1, characterized in that a strain buffering layer is formed

on said magnetosensitive section, and a protective film is formed thereon.

10. A method for producing a magnetoelectric transducer, characterized by comprising the steps of:

forming a thin film that senses magnetism, on a surface of an insulating substrate via an insulating layer, the substrate having conductive layers formed therein and mainly included of a high-melting-point metal layer and ceramic powders in a thickness direction of the substrate, a sintered compact of each of the conductive layers containing 10% or more and 90% or less of the high-melting-point metal;

forming a large number of magnetosensitive sections and internal electrodes of metal on the thin film in a pattern of elements to collectively form a large number of magnetoelectric transducers;

cutting the insulating layer on said conductive layer of said substrate;

electrically connecting the internal electrodes and conductive layers of each of said magnetoelectric transducers together;

forming a protective layer at least on said magnetosensitive section; and

cutting a central portion of each of the conductive layers of said substrate to individualize a large number of magnetoelectric transducers.

11. A method for producing a magnetoelectric transducer according to Claim 10, characterized by further comprising the step of coating metal suited for soldering, at least on said conductive layers of said magnetoelectric transducer which are exposed by cutting.

12. A method for producing a magnetoelectric transducer according to Claim 10, characterized in that the high-melting-point metal is W, Mo, Ta, or a mixture of two or more of these metals, and the sintered compact of the insulating layer is a substrate composed of alumina.

13. A method for producing a magnetoelectric transducer according to Claim 10, characterized in that an adhesive resin layer or an inorganic layer is formed on a upper surface of said insulating substrate, and the magnetosensitive layer and each of the internal electrodes are formed thereon.

14. A method for producing a magnetoelectric transducer according to Claim 10, characterized in that a resin layer is formed on the upper surface of said insulating substrate, and an InSb-based thin film having an electron mobility of 20,000cm^2/V/sec. or more is formed on the resin layer.

15. A method for producing a magnetoelectric transducer

according to Claim 10, characterized in that an inorganic layer is formed on the upper surface of said insulating substrate, and an InSb-based thin film having an electron mobility of 10,000cm^2/V/sec. or more is formed on the inorganic layer.

16. A method for producing a magnetoelectric transducer, characterized by comprising the steps of:

forming a thin film that senses magnetism, on a surface of an insulating substrate via an insulating layer, the substrate having a conductive layer formed therein and mainly included of a high-melting-point metal layer and ceramic powders in a thickness direction of the substrate, a sintered compact of each of the conductive layers containing 10% or more and 90% or less of the high-melting-point metal;

forming a large number of magnetosensitive sections and internal electrodes of metal on the thin film in a pattern of elements to collectively form a large number of magnetoelectric transducers;

etching the insulating layer on said conductive layers of said substrate;

electrically connecting the internal electrodes and conductive layers of each of said magnetoelectric transducers together;

forming a protective layer at least on the magnetosensitive section; and

cutting a central portion of each of the conductive layers of said substrate to individualize a large number of magnetoelectric transducers.

17. A method for producing a magnetoelectric transducer according to Claim 16, characterized by further comprising the step of coating metal suited for soldering, at least on said conductive layers of said magnetoelectric transducer which are exposed by cutting.

18. A method for producing a magnetoelectric transducer according to Claim 16, characterized in that the high-melting-point metal is W, Mo, Ta, or a mixture of two or more of these metals, and the sintered compact of the insulating layer is a substrate composed of alumina.

19. A method for producing a magnetoelectric transducer according to Claim 16, characterized in that an inorganic layer is formed on a upper surface of said insulating substrate, and the magnetosensitive layer and each of the internal electrodes are formed thereon.

20. A method for producing a magnetoelectric transducer according to Claim 16, characterized in that an inorganic layer is formed on the upper surface of said insulating substrate, and an InSb-based thin film having an electron mobility of 10,000cm^2/V/sec. or more is formed on the

inorganic layer.

21. A method for producing a magnetoelectric transducer, characterized by comprising the steps of:

forming an insulating layer on that part of a surface of an insulating substrate which is different from surfaces of conductive layers formed in the substrate and mainly included of a high-melting-point metal layer and ceramic powders in a thickness direction of the substrate, a sintered compact of each of the conductive layers containing 10% or more and 90% or less of the high-melting-point metal;

forming a thin film that senses magnetism, on the insulating layer;

forming a large number of magnetosensitive sections and internal electrodes of metal on the thin film in a pattern of final elements to collectively form a large number of magnetoelectric transducers;

electrically connecting the internal electrodes and conductive layers of each of said magnetoelectric transducers together;

forming a protective layer at least on said magnetosensitive section; and cutting a central portion of each of the conductive layers of said substrate to individualize a large number of magnetoelectric transducers.

22. A method for producing a magnetoelectric transducer according to Claim 21, characterized by further comprising the step of coating metal suited for soldering, at least on said conductive layers of said magnetoelectric transducer which are exposed by cutting.

23. A method for producing a magnetoelectric transducer according to Claim 21, characterized in that the high-melting-point metal is W, Mo, Ta, or a mixture of two or more of these metals, and the sintered compact of the insulating layer is a substrate composed of alumina.

24. A method for producing a magnetoelectric transducer according to Claim 21, characterized in that an inorganic layer is formed on a upper surface of said insulating substrate, and the magnetosensitive layer and each of the internal electrodes are formed thereon.

25. A method for producing a magnetoelectric transducer according to Claim 21, characterized in that an inorganic layer is formed on the upper surface of said insulating substrate, and an InSb-based thin film having an electron mobility of 10,000cm^2/V/sec. or more is formed on the inorganic layer.